RAILER SMS

Track Inspection

Inspection Approaches

- Detailed – capture all defects for work planning
- Safety – capture only critical safety related defects
- Uninspected Deteriorated – denote a track as completely deteriorated (to be taken out of service)

Detailed Inspection

- Requirement:
  - Track standards (sometimes)
  - Prudent management
- Purpose:
  - Determine track condition with respect to an index scale and track standards
  - Short and long range M&R planning
- Frequency:
  - Within M&R planning cycle
  - Annually (recommended)
  - As per standards

Detailed Inspection Features

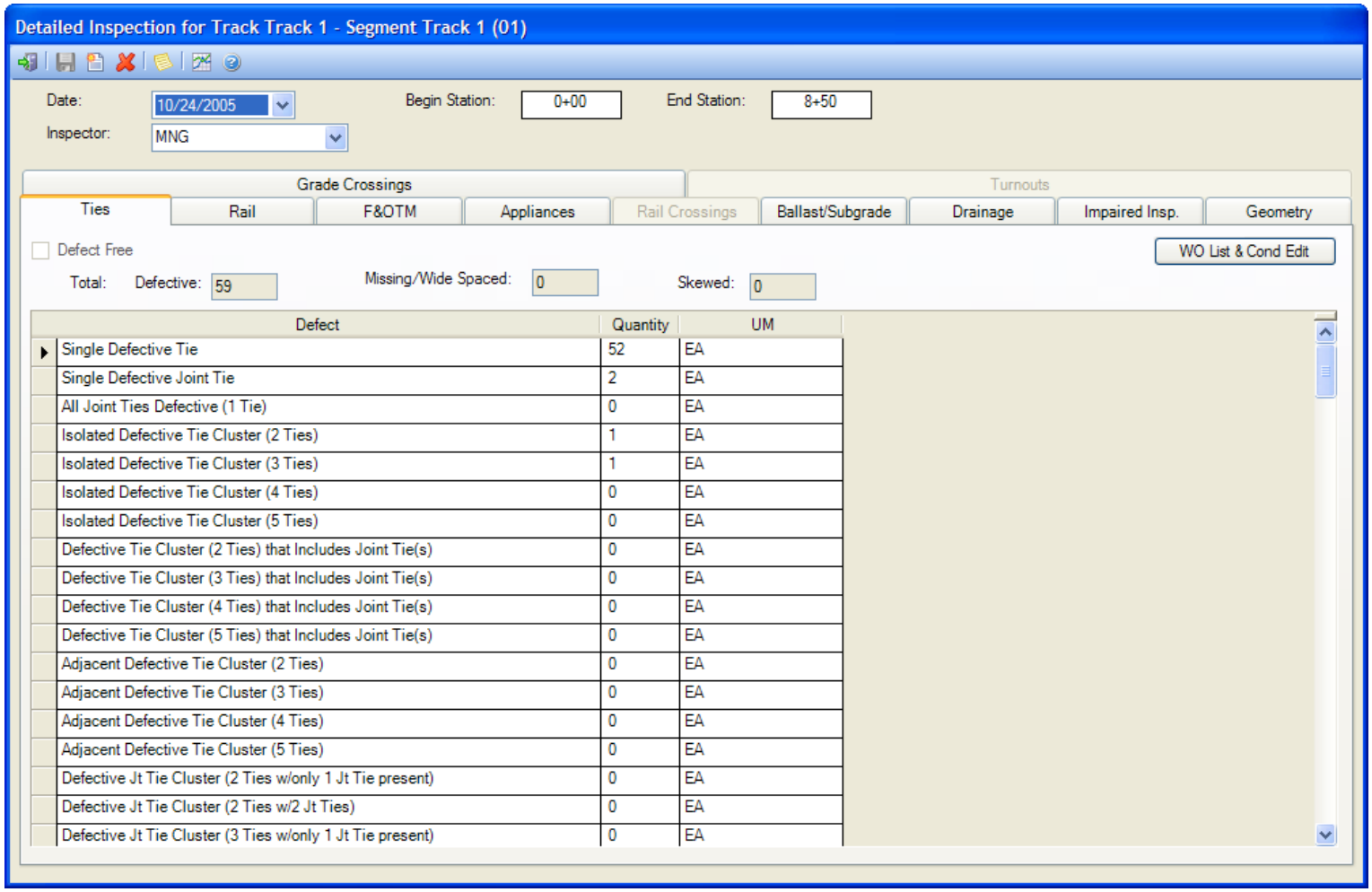
- Separate RAILER forms for:
  - Rail, F&OTM, ballast, drainage, rail crossing, and appliances
  - Ties
  - Inspection impaired
  - Turnouts
  - Grade crossings
  - Manual geometry
- Location of track defects listed.
- Length/Density features can be used for repetitive defects and/or when estimating quantity is prudent.
- Can incorporate results from internal rail flaw surveys.

Detailed Inspection Features (con't)

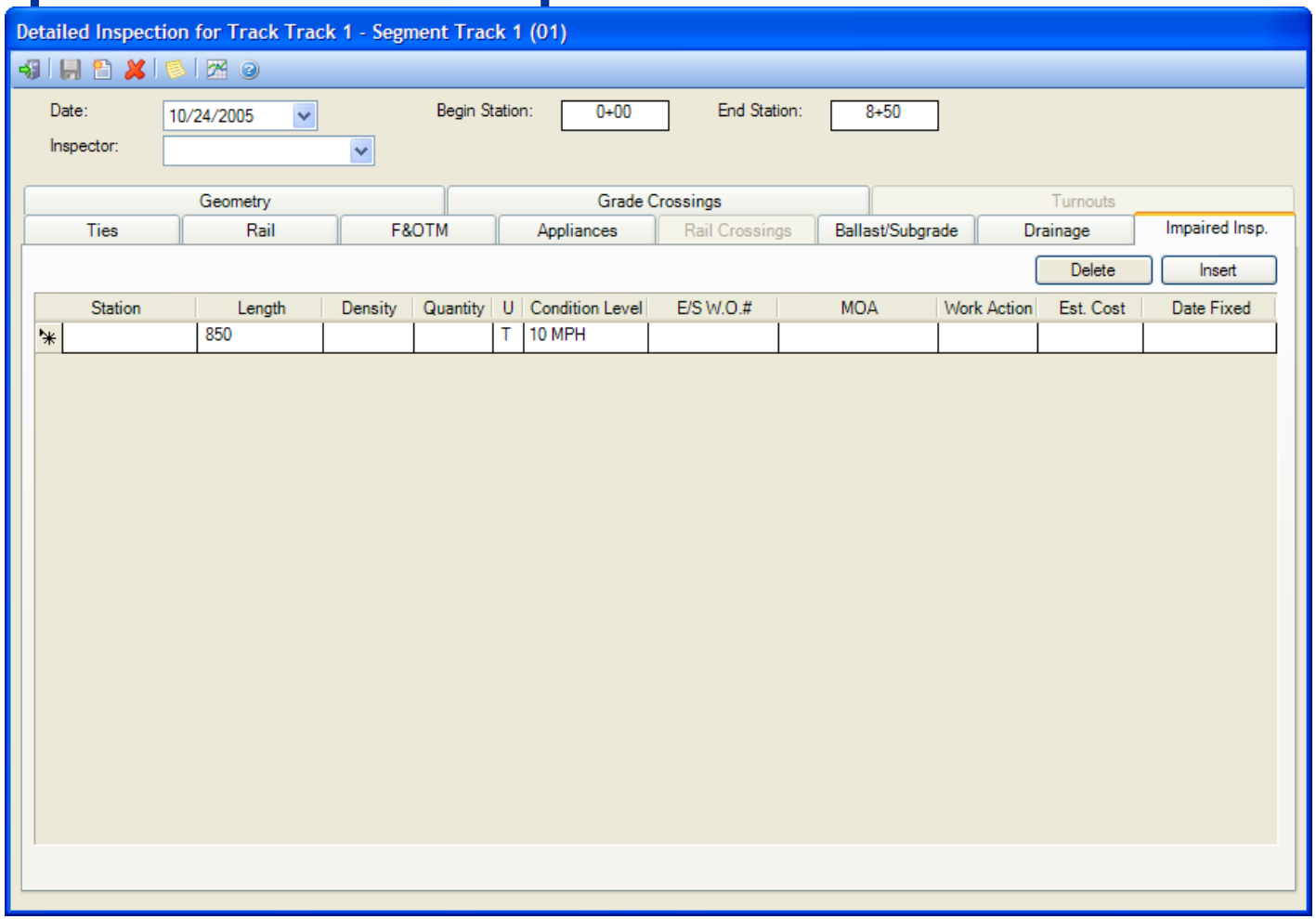
- A detailed inspection history is available
- The last set of inspection data can be carried over to the current inspection.
- Work orders to correct defects can be tracked.
- Inspector can override computed track standard condition. Results are shown in italics.
- When defects are corrected, RAILER re-sets the track condition.

Also… Run Inspection Report from each form

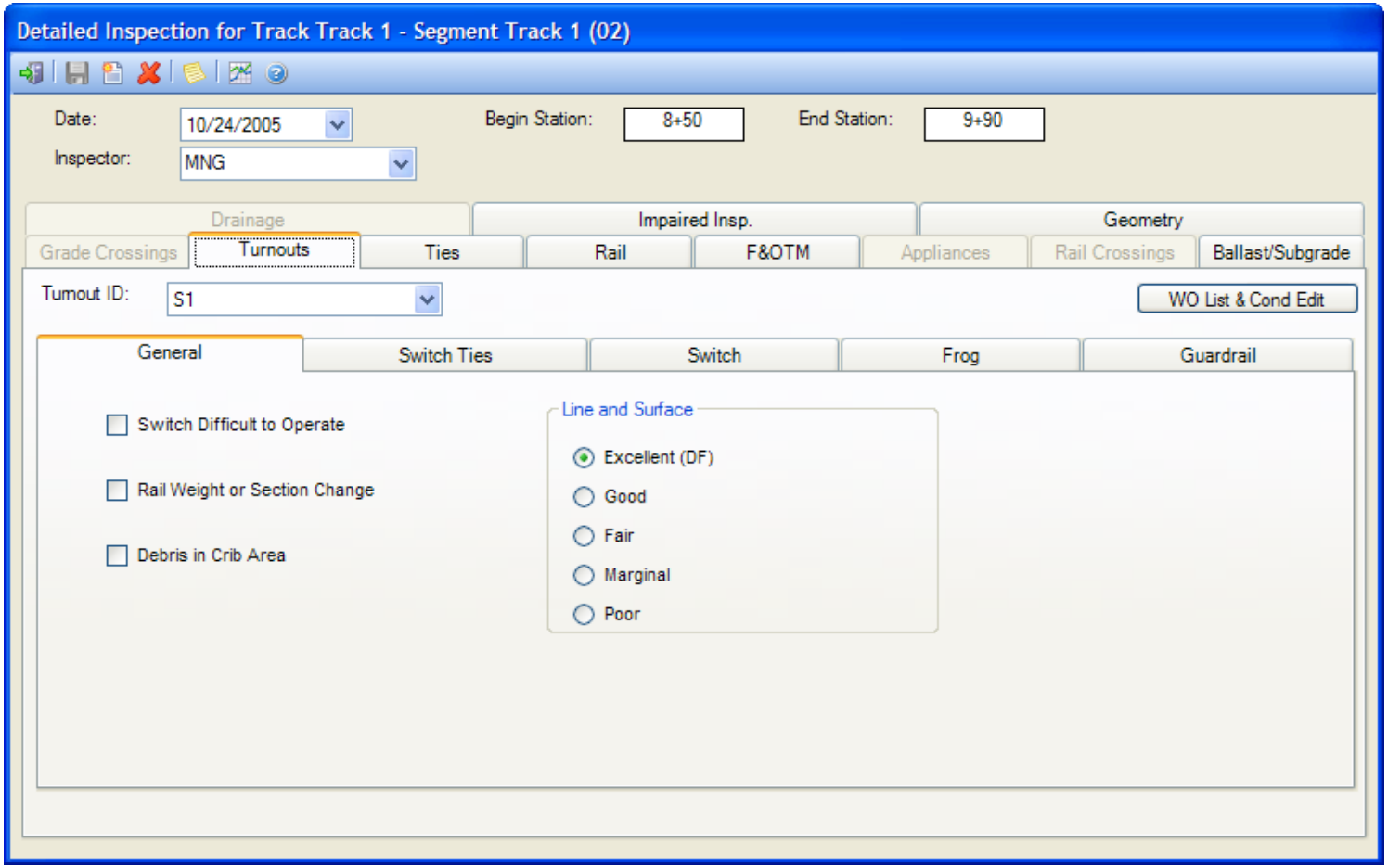
Detailed Inspection Form - Ties


Detailed Inspection for Track Track 1 - Segment Track 1 (01)
Date: 10/24/2005
Begin Station: 0+00
End Station: 8+50
Inspector: MNG
Grade Crossings
Turnouts
Ties
Rail
F&OTM
Appliances
Rail Crossings
Ballast/Subgrade
Drainage
Impaired Insp.
Geometry
Defect Free
WO List & Cond Edit
Total:
Defective: 59
Missing/Wide Spaced: 0
Skewed: 0
Defect
Quantity
UM
Single Defective Tie 52 EA
Single Defective Joint Tie 2 EA
All Joint Ties Defective (1 Tie) 0 EA
Isolated Defective Tie Cluster (2 Ties) 1 EA
Isolated Defective Tie Cluster (3 Ties) 1 EA
Isolated Defective Tie Cluster (4 Ties) 0 EA
Isolated Defective Tie Cluster (5 Ties) 0 EA
Defective Tie Cluster (2 Ties) that Includes Joint Tie(s) 0 EA
Defective Tie Cluster (3 Ties) that Includes Joint Tie(s) 0 EA
Defective Tie Cluster (4 Ties) that Includes Joint Tie(s) 0 EA
Defective Tie Cluster (5 Ties) that Includes Joint Tie(s) 0 EA
Adjacent Defective Tie Cluster (2 Ties) 0 EA
Adjacent Defective Tie Cluster (3 Ties) 0 EA
Adjacent Defective Tie Cluster (4 Ties) 0 EA
Adjacent Defective Tie Cluster (5 Ties) 0 EA
Defective Jt Tie Cluster (2 Ties w/only 1 Jt Tie present) 0 EA
Defective Jt Tie Cluster (2 Ties w/2 Jt Ties) 0 EA
Defective Jt Tie Cluster (3 Ties w/only 1 Jt Tie present) 0 EA

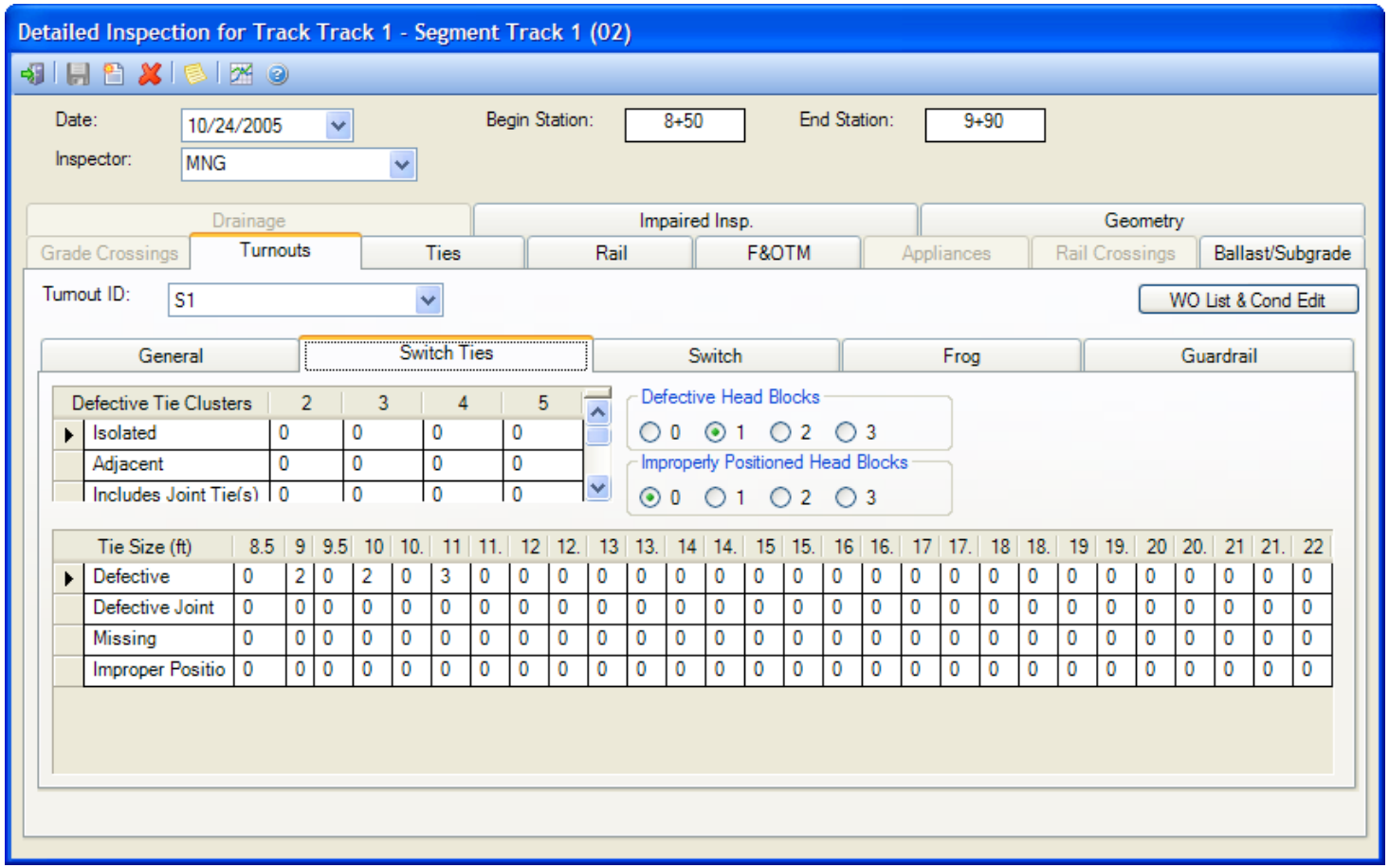
Detailed Inspection Form - Inspection Impaired



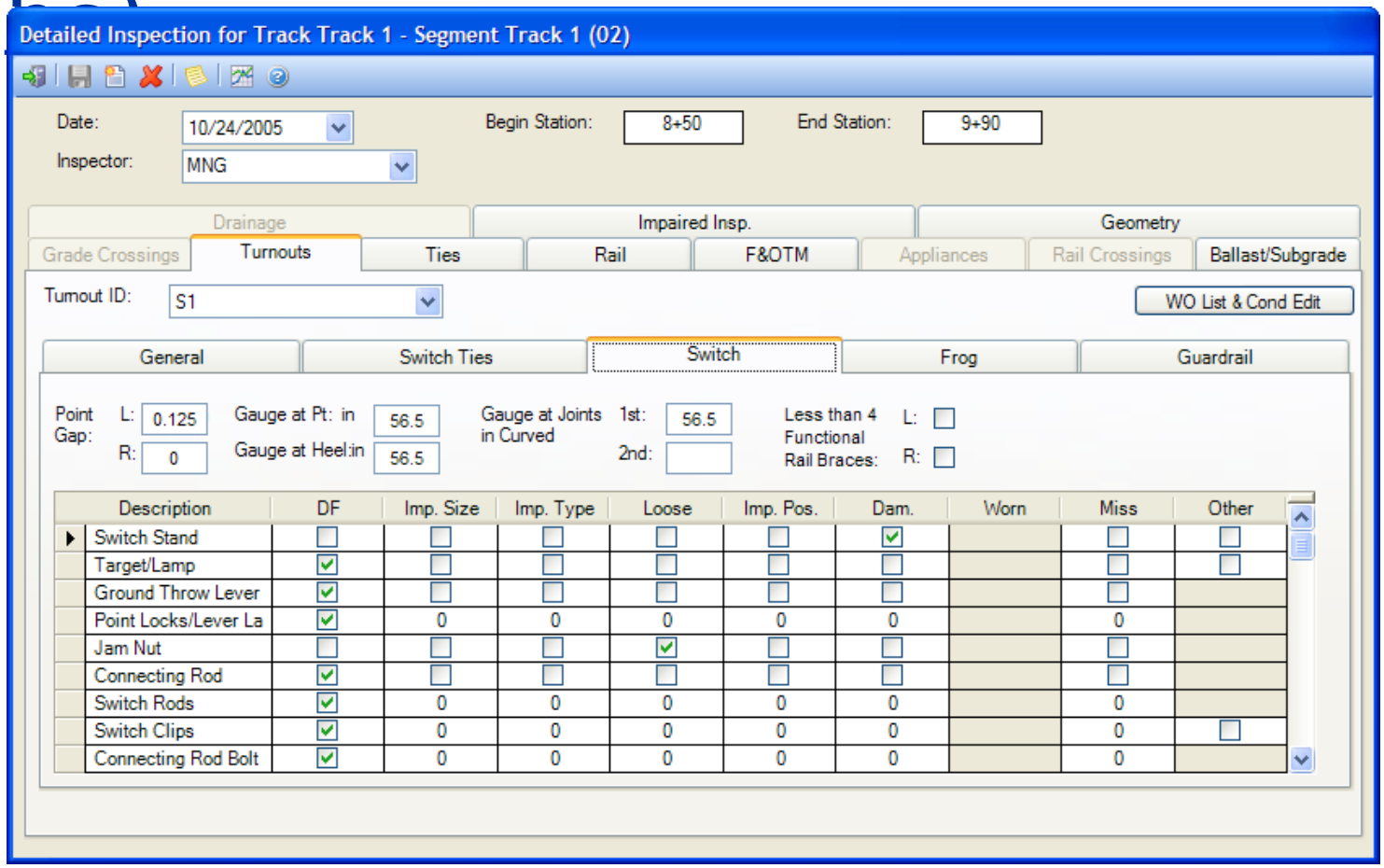
Turnout Inspection Form (General Tab)



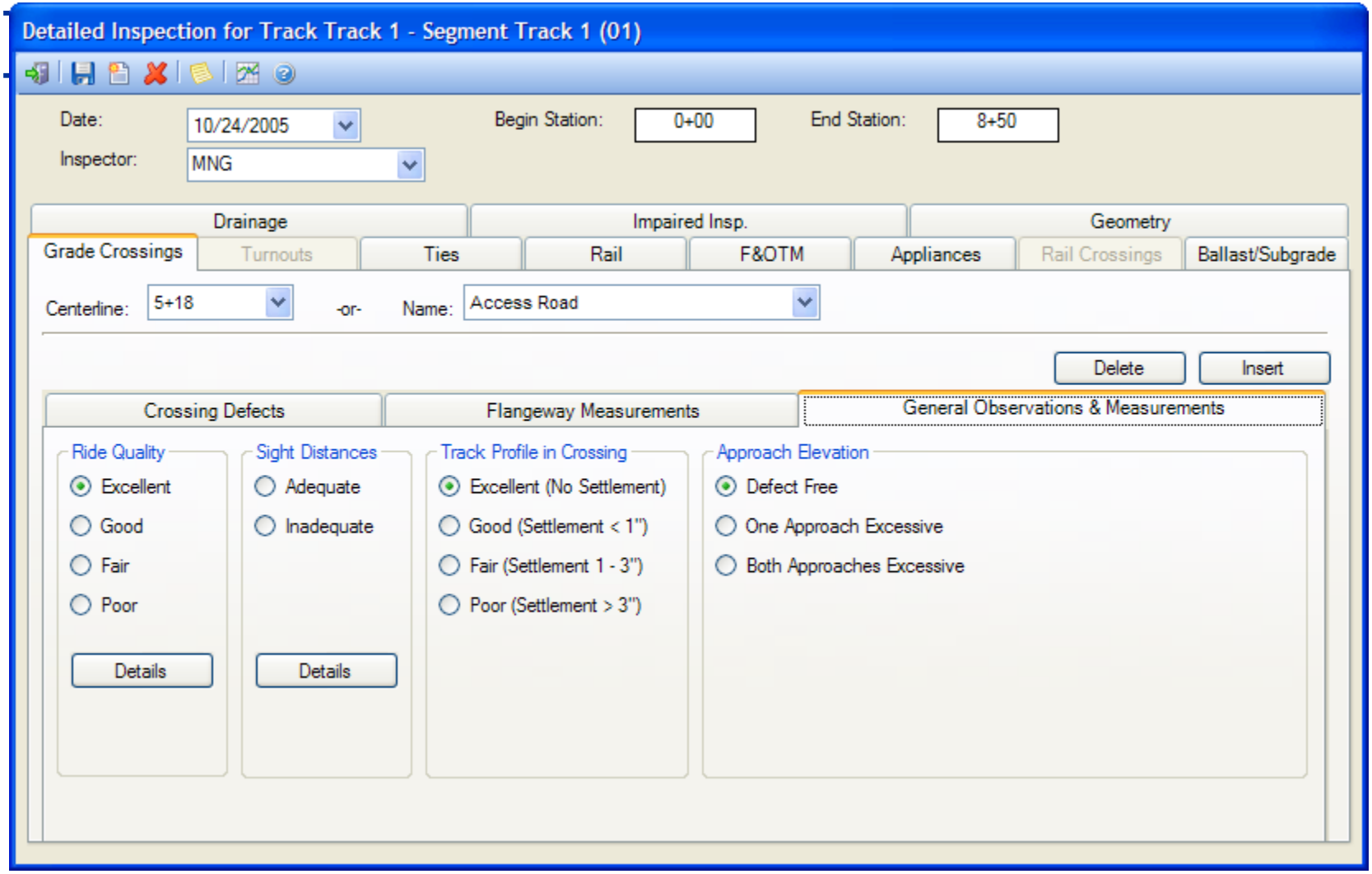
Turnout Inspection Form (Ties Tab)


Detailed Inspection for Track Track 1 - Segment Track 1 (02)
Date: 10/24/2005
Begin Station: 8+50
End Station: 9+90
Inspector: MNG
Drainage
Impaired Insp.
Geometry
Grade Crossings
Turnouts
Ties
Rail
F&OTM
Appliances
Rail Crossings
Ballast/Subgrade
Turnout ID: S1
WO List & Cond Edit
General
Switch Ties
Switch
Frog
Guardrail
Defective Tie Clusters 2 3 4 5
Isolated 0 0 0 0
Adjacent 0 0 0 0
Includes Joint Tie(s) 0 0 0 0
Defective Head Blocks
0 1 2 3
Improperly Positioned Head Blocks
0 1 2 3
Tie Size (ft) 8.5 9 9.5 10 10. 11 11. 12 12. 13 13. 14 14. 15 15. 16 16. 17 17. 18 18. 19 19. 20 20. 21 21. 22
Defective 0 2 0 2 0 3 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Defective Joint 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Missing 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Improper Positio 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

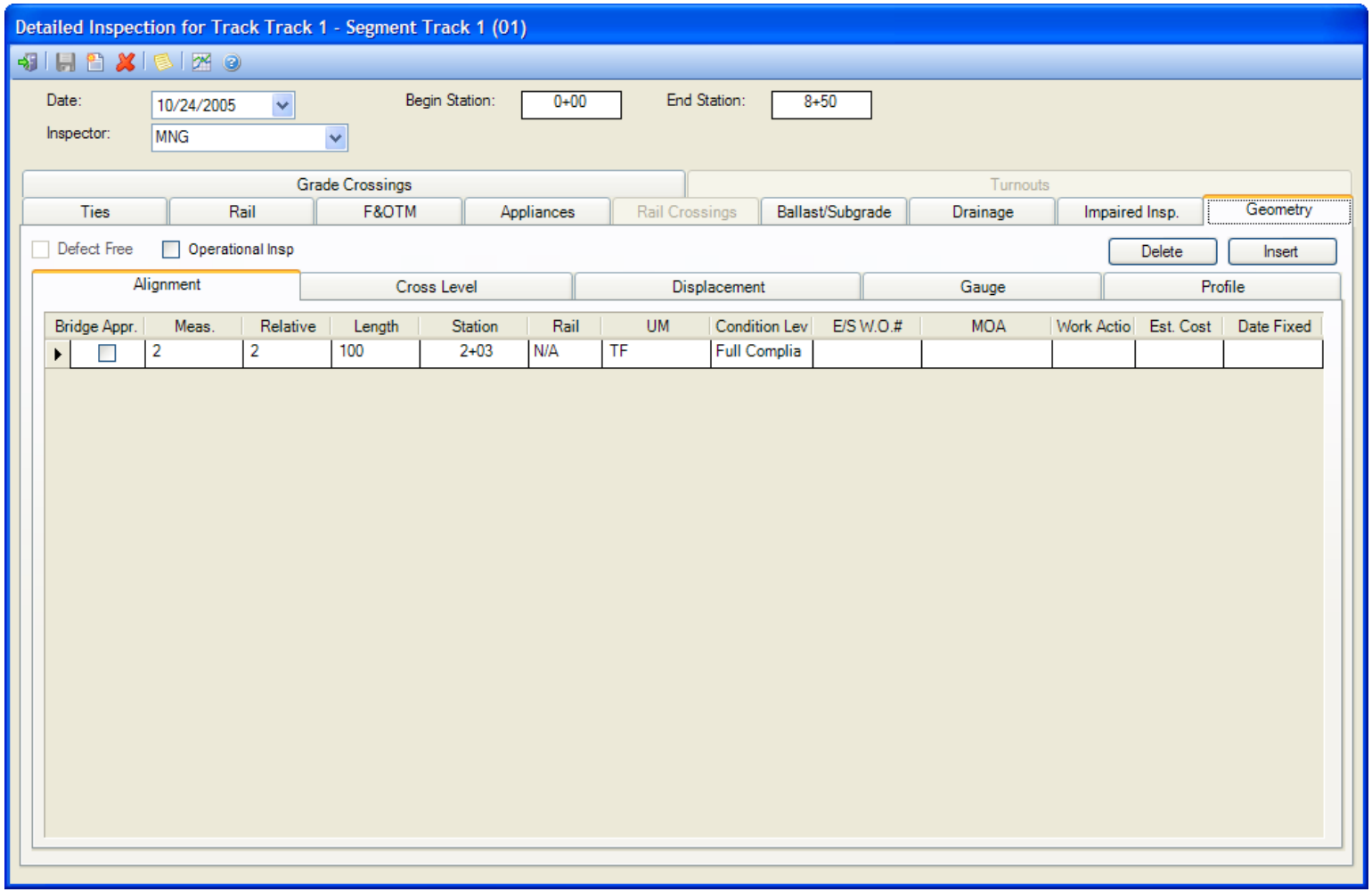
Turnout Inspection Form (Switch, Frog, and Guardrail Tabs)



Grade Crossing Inspection



Geometry Inspection Form



Inspection Report

RAILER®

Track Segment Inspection Report
10/1/99

Track Number: A11
Segment Number: A11

Begin Station: 0+00
End Station: 7+78
Track Standard: U.S. Army

TIES

Inspection Date: 6/29/99
Inspector: DRU

Defect	Qty (EA)	Std Level
Total Number Of Defective Ties	69	
Total Number Of Missing Ties	3	
Single Defective Tie	43	Full Compliance
Single Defective Joint Tie	2	Full Compliance
Isolated Defective Tie Cluster (2 Ties)	5	Full Compliance
Isolated Defective Tie Cluster (3 Ties)	2	10 MPH
Isolated Defective Tie Cluster (4 Ties)	1	5 MPH
Isolated Cluster with 1 Joint Tie (2 Ties)	2	Full Compliance
Single Missing Tie	3	Full Compliance

RAIL

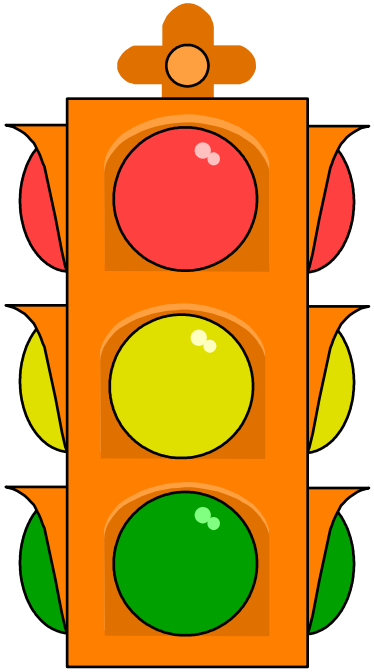
Inspection Date: 6/29/99
Inspector: DRU

Defect	Rail	Location	Qty (EA)	Std Level
None				Defect Free

Safety Inspections

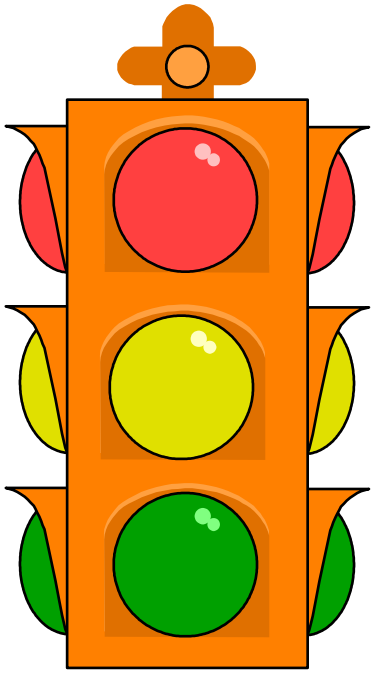
- Requirement:
  - Track Standards
  - Prudent Management
- Purpose:
  - Find critical defects
  - Ensure safe train operations
  - Impose operating restrictions, if unsafe
- Frequency:
  - As per track standards
  - As determined by management

Safety Inspection Features



- All track components are included on one form.
- All track defects in the RAILER database are available for inspector selection.
- Location of track defects listed.
- Can incorporate results from rail flaw surveys.
- Inspector can override computed condition. Results are shown in italics.
- Safety inspection history provided.

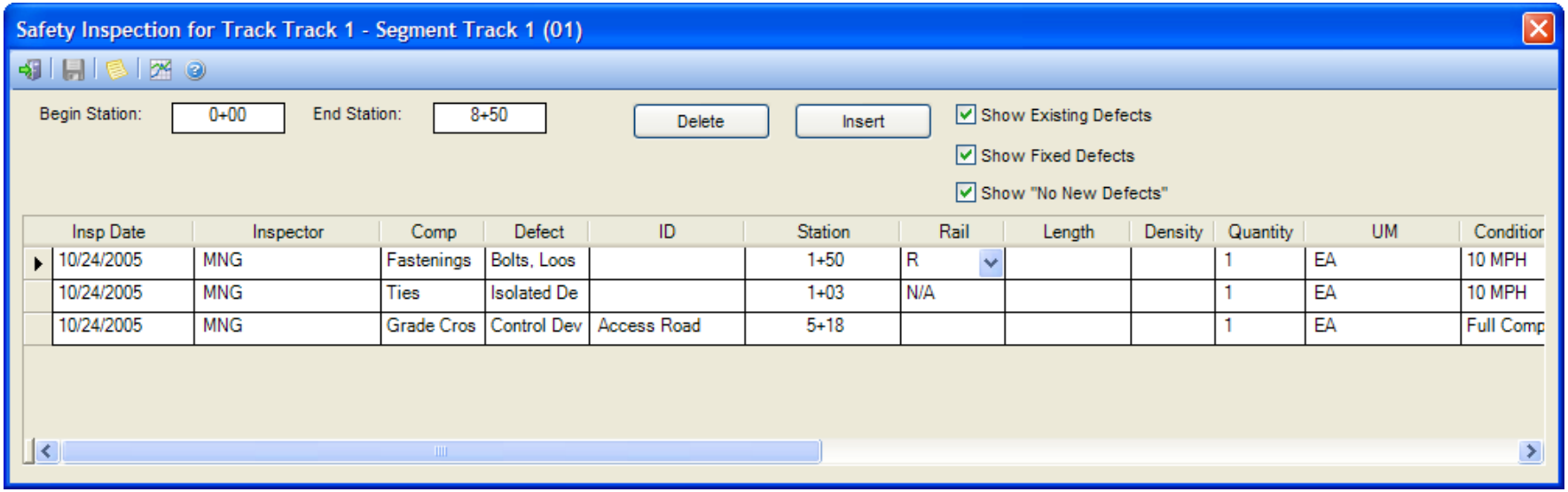
Safety Inspection Features (con't)



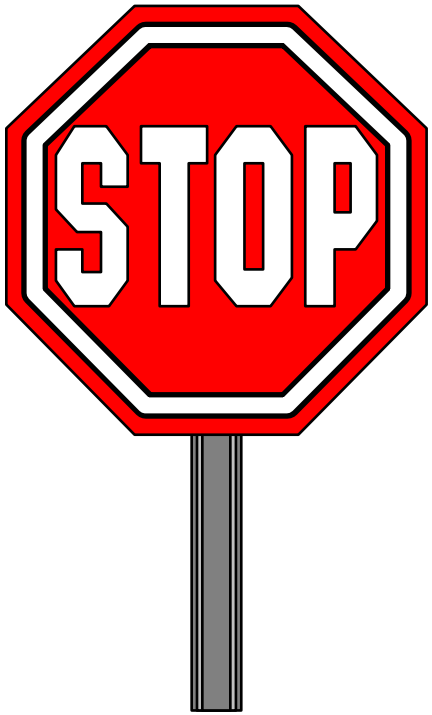
- Work orders to correct defects can be tracked.
- Work orders generated from detailed inspections can also be tracked here.
- All work order history is kept here.
- When defects are corrected, RAILER re-sets the track condition.

Also… Run Safety Inspection Report from here.

Safety Inspection Form

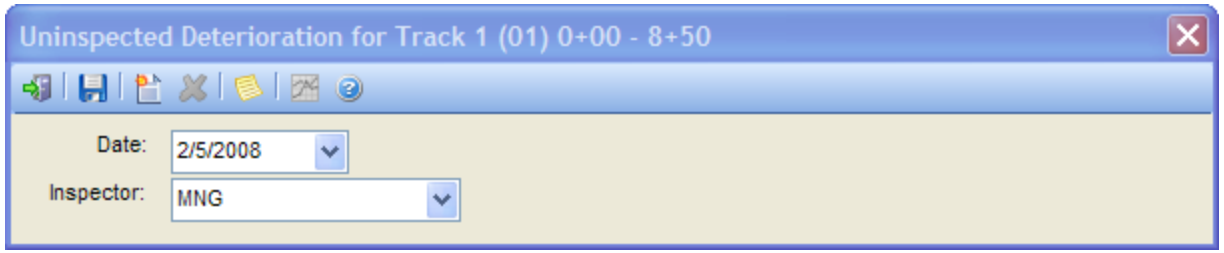

Safety Inspection for Track Track 1 - Segment Track 1 (01)
Begin Station: 0+00
End Station: 8+50
Delete
Insert
Show Existing Defects
Show Fixed Defects
Show "No New Defects"
Insp Date | Inspector | Comp | Defect | ID | Station | Rail | Length | Density | Quantity | UM | Condition
10/24/2005 | MNG | Fastenings | Bolts, Loos | | 1+50 | R | | | 1 | EA | 10 MPH
10/24/2005 | MNG | Ties | Isolated De | | 1+03 | N/A | | | 1 | EA | 10 MPH
10/24/2005 | MNG | Grade Cros | Control Dev | Access Road | 5+18 | | | | 1 | EA | Full Comp

Uninspected Deteriorated



- Optional use.
- Safety and detailed inspection hybrid.
- Consider as an inspection saving tool when track is so bad as to not warrant recording individual defects.
- Track condition will default to “No Operations” and a TSCI of zero.
- Reconstruction is only viable M&R alternative.

Uninspected Deteriorated Form



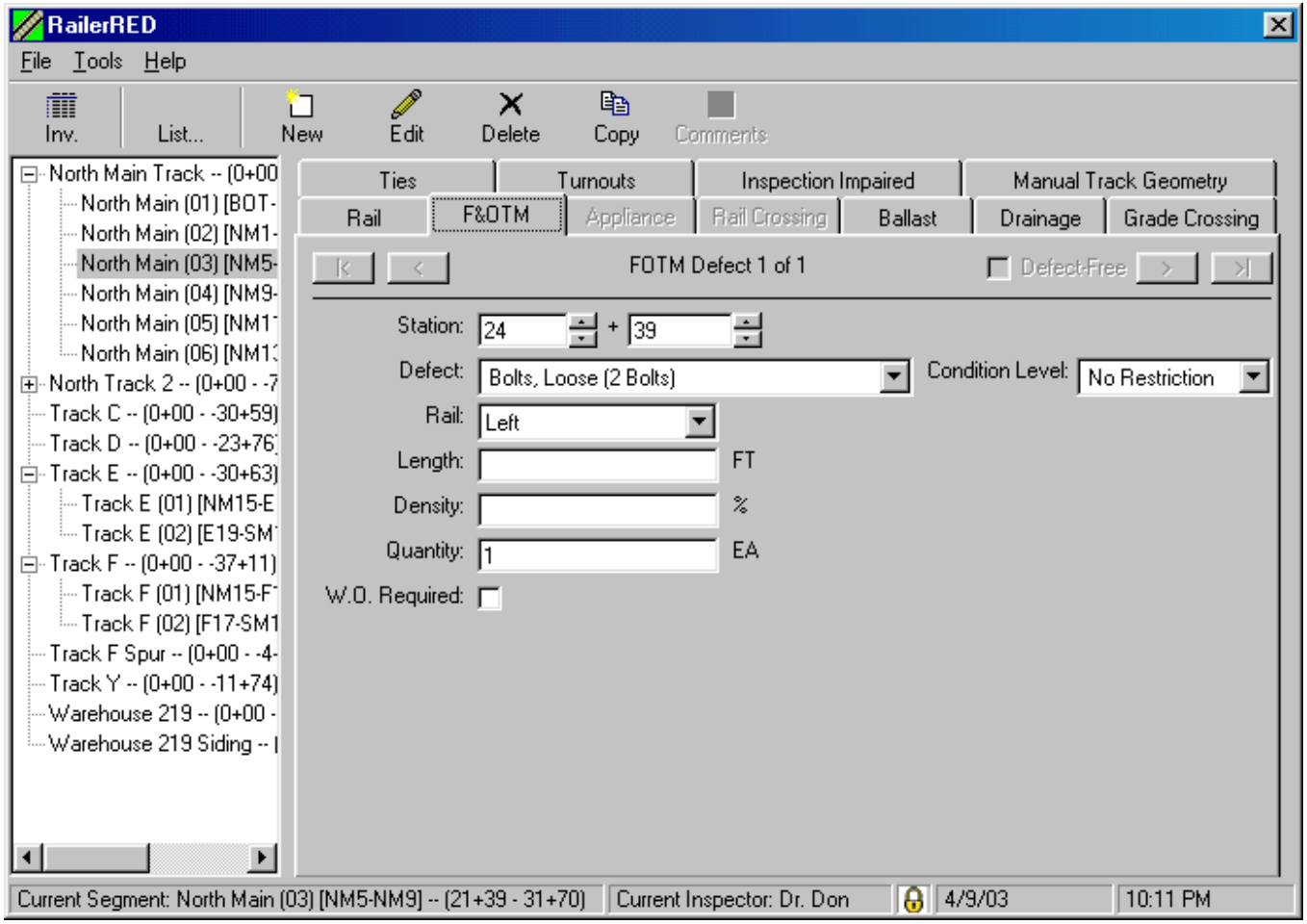
RAILER RED

Railer RED

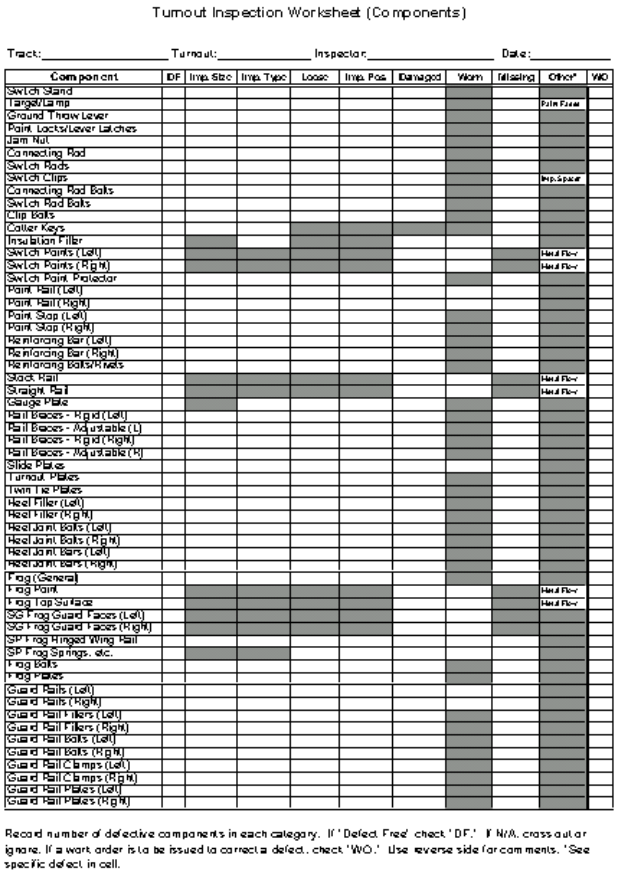
(Remote Entry Database)

- Pen-based inventory and inspection software.
- Optional use.
- Reduces the overall data collection and data entry effort significantly with less error.
- Transfer data electronically into RAILER.
- If preferred, inspection information can be loaded directly into RAILER.
- Most recent track inspection information is displayed. Can be used to view past findings. Can “copy” those defects into current inspection.

Inspection w/RAILER RED



Inspection Worksheets



Turnout Inspection Worksheet (Components)

Track:_____ Turnout:_____ Inspector:_____ Date:_____

Component	DF	Imp. Stkr	Imp. Type	Loose	Imp. Pos.	Damaged	Worn	Missing	Other*	WO
Switch Stand										
Target/Lamp									Paint Fade	
Ground Throw Lever										
Point Locks/Lever Latches										
Jam Nut										
Connecting Rod										
Switch Rods										
Switch Clips									Imp. Spacer	
Connecting Rod Bolts										
Switch Rod Bolts										
Clip Bolts										
Cotter Keys										
Insulation Filler										
Switch Points (Left)									Head Flow	
Switch Points (Right)									Head Flow	
Switch Point Protector										
Point Rail (Left)										
Point Rail (Right)										
Point Stop (Left)										
Point Stop (Right)										
Reinforcing Bar (Left)										
Reinforcing Bar (Right)										
Reinforcing Bolts/Rivets										
Stock Rail									Head Flow	
Straight Rail									Head Flow	
Gauge Plate										
Rail Braces - Rigid (Left)										
Rail Braces - Adjustable (L)										
Rail Braces - Rigid (Right)										
Rail Braces - Adjustable (R)										
Slide Plates										
Turnout Plates										
Twin Tie Plates										
Heel Filler (Left)										
Heel Filler (Right)										
Heel Joint Bolts (Left)										
Heel Joint Bolts (Right)										
Heel Joint Bars (Left)										
Heel Joint Bars (Right)										
Frog (General)										
Frog Point									Head Flow	
Frog Top Surface									Head Flow	
SG Frog Guard Faces (Left)										
SG Frog Guard Faces (Right)										
SP Frog Hinged Wing Rail										
SP Frog Springs, etc.										
Frog Bolts										
Frog Plates										
Guard Rails (Left)										
Guard Rails (Right)										
Guard Rail Fillers (Left)										
Guard Rail Fillers (Right)										
Guard Rail Bolts (Left)										
Guard Rail Bolts (Right)										
Guard Rail Clamps (Left)										
Guard Rail Clamps (Right)										
Guard Rail Plates (Left)										
Guard Rail Plates (Right)										

Record number of defective components in each category. If 'Defect Free' check 'DF.' If N/A, cross out or ignore. If a work order is to be issued to correct a defect, check 'WO.' Use reverse side for comments. *See specific defect in cell.

- Used for field data collection in lieu of RAILER RED.
- Optional use.
- Worksheets exist for all inspection types.
- Available in an EXCEL format. Simply print the desired sheets and amount.
- Provided with the RAILER install CD.
- Transfer data manually into RAILER.

Key Points to Remember

- Safety inspections provide condition assessment from standards only.
- Detailed inspections provide condition assessment from standards and condition indexes.
- An inspection unit is the track segment (or track when no segments exist).
- An inspection record and the resulting condition assessment are linked to a given date. There is a 5 day grace period in RAILER RED.
- For safety inspections, have ONE date per segment per inspection cycle.

Key Points to Remember (con't)

- For detailed inspections, have ONE date per segment, per component, per inspection cycle.
- For detailed inspections, all defects, except tie defects, are referenced to location, turnout ID, or crossing ID so that they may be located later.
- For safety inspections, all defects are referenced to location, including tie defects, to facilitate repair.
- For rail defects, if multiple defects occur in a single rail, use the same station location for each.

Key Points to Remember (con't)

- For joint defects, if multiple defects occur in a single joint, use the same station location for each.
- Turnout inspection encompasses turnout components only, including switch ties. Rail, ballast, etc. are inspected as part of their own component groups.
- When encountering large tie clusters (> 5 ties), begin with the joint tie cluster, if present, and work outwards in groups of 5 with the last being a small cluster or a single tie.

Questions?